The Daniel J. Alderson Collection, 1962-1986
12.6 cubic feet
JPL 127

Biography

Daniel John Alderson was born October 31, 1941. He graduated with a Bachelor of Science degree in Astronomy from the California Institute of Technology (Caltech) in 1963, and attended but did not complete graduate studies in Astronomy at Caltech in 1963-64. Alderson was hired by the Jet Propulsion Laboratory (JPL) in June 1960 as a part-time engineer in Section 292, System Design and Integration. He became a full-time JPL employee in 1962 and was promoted to a Programmer in Section 315, Program Engineering in November 1966. During the early 1970s, Alderson worked in JPL Section 914, Science and Engineering Computing. In 1976 he moved to Section 372, General Purpose Computing Services. In 1978 Alderson moved to Section 314, Navigation Systems, where he stayed for the rest of his employment.

Alderson specialized in mathematics and computer programming. Among the projects he worked on as a Cognizant Programmer, either alone or in collaboration, were the Asymptotic Series for Trajectories of Spacecraft with Low Thrust (ASTRAL), beginning in 1967; Pioneer Maneuver Operations Program System (PMOPS), beginning in 1971; Trajectory Monitor (TRAM), beginning in 1972; Fast Phi-Factor Generator Program (FPGP), beginning in 1975.

Alderson was a member of the Mariner Jupiter/Saturn Command Software Team, beginning in 1974, and a member of the JPL Committee on Modern Programming (COMP) and its Language Working Group, beginning in 1975.

Alderson took disability leave from Section 314 beginning in late 1987. He died May 17, 1989, while on disability leave.

Provenance

The collection was transferred from the office of Daniel J. Alderson, Section 314, Navigation Systems Section, to the JPL Records Center on September 3, 1986, after several Section 314 employees, including Alderson, moved from Building 264 to the new Central Engineering Building (Building 301), which had smaller office space. The collection was transferred to the JPL Archives on March 2, 1992.

Collection Arrangement and Description

The collection represents Alderson’s personal interests. Included is information about his involvement with the Los Angeles Science Fantasy Society. Two of Alderson's other interests were mathematics and computer programming, both of which are heavily documented in the collection. Alderson's work in designing computer programs to calculate trajectories of space probes is also described.

The collection is organized into 7 series: Personal Information, Committee on Modern Programming, Computer Languages, Trajectory Group and Navigation Group Progress Reports, Computer Programs, Miscellaneous Mathematics Files, and Oversize Materials. The two series of Computer Languages and Computer Programs are divided into several sub-series, each reflecting a particular computer language or program. Each series and sub-series is arranged in chronological order unless otherwise noted.

Personal Information (Box 1, folders 1-17). This series includes personnel information such as resumes, employee performance appraisals, Alderson's work schedule during the Pioneer and Voyager missions, and personal information, such as citations of technical books Alderson intended to read, his participation in the Los Angeles Science Fantasy Society (LASFS), and Christmas card name lists.

Citations of books Alderson felt were of enough importance for him to consult are documented in two files labeled "Books to Look Up." Some of the clippings are in envelopes labeled by subject, although most of them are loose. Two Christmas card lists of names were retained due to the informational value showing Alderson's contacts in his professional life. Also included is a 1981 holiday form letter from Jonathan V. Post, which includes information on Post's activities at JPL.

Alderson was an active participant in the Los Angeles Science Fantasy Society (LASFS), and served as a technical advisor to several science fiction authors, most notably Larry Niven and Jerry Pournelle.

Niven credited Alderson as one of two people who gave him the idea for his novel *Ringworld,* published in 1970. Niven and Pournelle in collaboration have used Alderson in several stories, including as a thinly-disguised character in the novel *Lucifer's Hammer,* and naming a faster-than-light stardrive the "Alderson Drive" in another novel. Alderson also invented a space war-strategy game called "Space War" in 1959, and had been perfecting it off and on for several years. A basic introduction of the game, plus snapshots of some moves are included in the file.

Committee on Modern Programming (COMP) (Box 2, folders 18-24). COMP was formed in November 1973. It was composed of a dozen JPL employees from various sections. Represented in the collection are meeting minutes, from May 1974 to November 1975. Beginning in June 1975, aside from the standard meeting minutes, the minutes also included short articles, references to new books in the programming literature, and a photocopy of a pencil-drawing by Ron Spriestersbach of a noteworthy individual on the committee. Alderson was also a member of the Committee's Language Working Group (LWG).

The series consisting of computer language documentation was split into various sub-series involving different types of language.

FORTRAN Information (Boxes 3-5, folders 25-75). FORTRAN, developed originally by IBM in 1956, and modified several times, was the first high level computer programming language. It was the workhorse computer language for NASA and JPL well into the 1980s. The majority of the programs described in the collection were written in some version of FORTRAN. Represented in the collection are memoranda, correspondence, programming guides, technical memoranda, handwritten notes and transparencies. Also represented are files dealing with variations of FORTRAN programs such as S-Fortran, SFTRAN and Athena Fortan. SFTRAN was a superset of FORTRAN, with translation accomplished through use of non-Fortran key words, and is transparent to the FORTRAN subset of SFTRAN. Additional FORTRAN information is also located in the VAX series. Many of the programs in the oversize materials were written in FORTRAN.

MBASIC (Box 5, folders 76-79). MBASIC, developed by Microsoft in 1975, was an advanced version of the BASIC computer language developed originally at Dartmouth College in 1964. Included in the collection is a two-volume MBASIC manual, a primer, and assorted notes.

PL/1 (Boxes 6-7, folders 80-93). PL/1, or "Programming Language 1" was a computer language developed in the early to mid 1960s. Included in the collection are manuals and specifications.

HAL/S (Box 7, folders 94-96). HAL/S was a PL/1 derivative programming language, designed specifically for NASA in use for flight applications, and to support flight programming for the Space Shuttle. Included in the collection are a user's guide, language specifications and other documents. There is additional HAL/S material in the AON Series, located below.

Ada Programming Language (Box 8, folders 97-99). Ada was a computer programming language designed for the U.S. Department of Defense (DoD). The language was made public in 1980. DoD planned to gradually phase out all the other programming languages used by the services and make Ada the primary language for all embedded computer applications used for DoD purposes. There was a concerted effort by some to persuade NASA to adopt Ada for use in NASA flight projects over the older HAL/S language. Included in the collection are reports and articles.

Pascal (Box 8, folders 100-104). Included in the series are reports.

SIMSCRIPT (Boxes 8-9, folders 105-108). SIMSCRIPT was a computer language used at JPL during the 1970s. It was used for simulation modeling, data analysis and summarization and scientific computing. Included in the collection are notes and user manuals.

ALGOL (Box 9, folders 109-114). ALGOL (ALGOrithmic Language) was originally developed in Zurich, Switzerland in 1958. Included in the collection are reports and notes.

Simula (Box 9, folders 115-116). This series consists of two folders of programmer reference manuals.

APL (Box 9, folders 117-120). APL (A Programming Language) was a language for use with time-sharing systems with remote terminals. It was originally developed in 1962. This short series consists of manuals and a primer.

SNOBOL (Box 10, folders 121-122). SNOBOL (String-Oriented Symbolic Language) was a programming language developed by Bell Laboratories in the mid 1960s. This series consists of a report and a primer.

VAX/VMS (Boxes 10-11, folders 123-135). Included in the collection are reference manuals, user guides, memoranda and correspondence.

Miscellaneous Computer Language Handbooks (Boxes 11-12, folders 136-146). Included are manuals, guides and handbooks of other computer languages that are represented in the collection by a single file. It was decided to file these in one series rather than have a dozen single-file series.

Trajectory Group and Navigation Group Progress Reports (Box 12, folders 147-152). This series consists of monthly reports of the Trajectories Programming Group of Section 315, of which Alderson was a member. The reports showed the status on the various programs that each member was involved in. Alderson was involved in the writing of ASTRAL, the Mariner '71 Propulsion Subsystem Operation and Performance (PSOP) Program, the Mariner Maneuver Operations Program System (MOPS) and the Pioneer MOPS. Each of those programs are documented and described in their respective series.

The Navigation Group Progress Reports begin almost as a daily journal of tasks accomplished, from November 1974 to May 1975. After May 1975, it became a bimonthly summarization of current assignments, future assignments, and schedules.

Trajectories and Ephemerides Files (Box 13, folders 153-161). Included in the series are mathematical equations, reports, memoranda, lists and published articles about trajectory routines of space probes and the ephemeredes of stars and planetary satellites.

Time Conversion Materials (Boxes 13-14, folders 162-172). This series documents several computer programs to convert different time standards, such as Julian Date and Besselian Year. Also represented in the series are two time conversion programs. TIMFMT was a program that converted the representation of time between three different formats: calendar date, seconds past J2000, and Julian date. TIMETRANS provided subroutines for converting between different time formats and for converting between different time scales. Time scales supported by the program were ephemeris time (ET), international atomic time (TAI), broadcast universal time (UTC), and observed universal time (UT1).

ASTRAL (Box 14, folders 173-183). ASTRAL (Asymptotic Series for Trajectories of Spacecraft with Low Thrust) was a program that computed low-thrust spacecraft trajectories using either asymptotic series approximations, or numerical integration. ASTRAL was used in calculating trajectory of Pioneer spacecraft in the 1970s. As Cognizant Programmer, Alderson wrote the ASTRAL User's Guide. ASTRAL was written in FORTRAN IV and FORTRAN V. Represented in the collection are rough drafts of the user's guide developed by Alderson, as well as status reports, calculations, computer printouts and a reference manual.

AON (Boxes 15-16, folders 184-199). AON (Automated Orbital Navigation) was conceived as a cost-effective successor to the Autonomous Guidance and Navigation system. The purpose was to develop a technology base to demonstrate the feasibility of autonomous onboard navigation, and to reduce mission operations costs and reduce reaction time for the approach navigation function through ground-based navigation. AON was planned originally to be operational by the orbital phase of the Galileo space probe. A prototype was demonstrated with recorded Viking data and Voyager data from Jupiter in September 1979. The multiple postponements of Galileo evidently proved to be the undoing of AON. Galileo ultimately used Optical Navigation, a solid-state image taken for optical navigation, typically the limb and terminator of a body with background stars. AON used the HAL/S language and compiler, and there are a few files documenting this. Included in the collection are interoffice memoranda, copies of presentations, schedules, status reports, and handwritten notes.

The key program that Alderson was involved in that had use on several missions was the Maneuver Operations Program System (MOPS). MOPS was a FORTRAN program that assisted operations personnel in selecting and performing interplanetary guidance corrections. The program could be used to compute the precise velocity correlation required to perform an interplanetary guidance correction. MOPS was comprised of 30,000 lines of FORTRAN code.

Mariner-Mars 71 MOPS (Boxes 16-17, folders 200-212). This series is comprised of reports, memoranda, notes and schedules regarding the Maneuver Operations Program System of the Mariner 9 space probe, called Mariner-Mars 71 before launch. One file pertaining to the Propulsion Subsystem of the Mariner-Mars probe is included to maintain the integrity of the Mariner-Mars 71 documents. Also represented in the collection are documents regarding the Propulsion Subsystem Operations Program (PSOP) Software Requirement Document, which was a FORTRAN V program written for the Univac 1108 computer to simulate the propulsion subsystem of the Mariner Mars '71 spacecraft. The program was used to calculate the velocity changes and engine burn times in simulated midcourse maneuvers.

Mariner Venus-Mercury 73 MOPS (Box 17, folders 213-214). This series contains the user guide for the MOPS of the Mariner 10 probe that flew by Venus and Mercury.

Pioneer MOPS (Boxes 17-18, folders 215-227). The Pioneer Maneuver Operations Program System (PMOPS) concentrated on maneuvers made by the Pioneer 10 and 11 spacecraft en route to Jupiter. PMOPS evaluated the nominal (no maneuver) trajectory, determined the maneuver to be made, evaluated the resulting trajectory, and produced a detailed description of the selected maneuver process. This series includes mathematical formulas, memos, programming requests, user guides and reports.

Viking Documents (Boxes 18-19, folders 228-242). The series includes documents dealing with the Viking Midcourse Maneuver Operations Program (MMOP) and the Viking Orbiter Trajectory Monitor (TRAM). The MMOP assisted operations personnel in selecting, evaluating, and performing midcourse guidance corrections. The Trajectory Monitor, Program Description Document (TRAM PDD) was prepared by Alderson. The TRAM PDD was used to organize the sequencing and execution of user programs so that they could be modified and executed more easily. The TRAM program was operated on the Univac 1108 computer using the Exec-8 operating system.

Mariner Jupiter/Saturn 77 - Voyager Documents (Boxes 20-23, folders 243-276). This series includes documents dealing with MOPS and orbital trajectory programs of the Mariner Jupiter/Saturn 1977 mission, renamed Project Voyager in 1977, shortly before the launch of Voyager 1 and 2. The MJS77 MOPS was used to plot out precision trajectory correction maneuvers for the spacecraft.

There are several files documenting the Voyager Double Precision Trajectory Program/Orbit Determination Program (DPTRAJ/ODP). The DPTRAJ Program integrated the spacecraft's acceleration models to produce a high precision spacecraft ephemeris. The DPTRAJ program was comprised of 150,000 lines of FORTRAN code. The ODP computed a best-estimate solution for the spacecraft orbit and selected physical and observational parameters after comparing the differences between expected and observed data. The ODP also computed the spacecraft's position and velocity. The ODP program was comprised of 200,000 lines of FORTRAN code.

EDT Editor Manuals (Box 23, folders 277-281). This series is composed of manuals for the EDT Editor. EDT was the standard test editor of Digital Equipment Corporation.

IBM Documents (Box 24, folders 282-293). This series is composed of guides and manuals of IBM products.

Miscellaneous Computer Files (Boxes 25-29, folders 294-381). This series is composed of other computer-related files that did not easily fit into any of the above categories. Represented in the collection are manuals, reports, computer printouts, handwritten notes, memoranda, and handbooks.

Miscellaneous Mathematics Files (Boxes 29-30, folders 382-407). This series is composed of files that are not specifically related to any computer language or program, and that do not easily fit into any other category. The majority of them deal in some manner with mathematics. Three files document the Summer Institute of Planetary Physics at UCLA in 1963. The series includes published material, a Master's Thesis by Theodore D. Moyer regarding relativistic equations of motion, memoranda, notes, reports, graphs, and mathematical calculations and equations.

Computer Printouts- Oversize (Boxes 31-36, folders 408-492). The oversize materials are composed primarily of computer printouts. There are five oversize folders documenting the Voyager Maneuver Operations Program System (MOPS).

Additionally, there is documentation regarding AMSAT OSCAR 8, one of a series of communications satellites built by amateur radio operators, for ham radio operator use. The first Oscar

satellite was launched in 1961 aboard Discoverer 36. AMSAT (Radio Amateur Satellite Corporation) OSCAR (Orbiting Satellite Carrying Amateur Radio) 8 was a piggyback passenger aboard a Delta 139 launch vehicle carrying LANDSAT-C, launched from Vandenberg Air Force Base on March 5, 1978. The oversize file on OSCAR contains a status report, orbital parameters, computer printouts, handwritten notes, calculations, published material, and a program to print tables of passes of a circular-orbit satellite through a specified latitude with longitude and time in specified ranges. Also represented in the oversize files is a file documenting Navigation Ancillary Information Facility (NAIF) Trajectory and Ephemeris Data Files. These programs maintain spacecraft trajectory files and planet and satellite ephemeris files in FORTRAN direct access.

The computer programs represented in the oversize files are filed in alphabetical order. The dates range from 1983-1985, with a bulk date of 1983.

Conservation/Preservation

Standard preparations of documents for long term storage were completed.

Separation Statement

Two books found in the collection were discarded: P. J. Kiviat, R. Villanueva and H. M. Markowitz, *The Simscript II Programming Language*, (Prentice-Hall, Englewood Cliffs, N.J., 1968), and a photocopy of Brian W. Kernighan and P. J. Plaugher, *The Elements of Programming Style*, (McGraw-Hill, New York, 1974.) Numerous photocopies of articles with no connection to JPL, primarily dealing with computer programming, were also discarded.

Fifteen items were removed from the collection and placed in the JPL History Collection. Those items are:

1. NASA Contractor Report, *Mars Atmosphere Definition Final Report: Voyager Spacecraft*, January 1968. Reproduced from microfiche.
2. Joseph L. Brady, "The Effect of a Trans-Plutonian Planet on Halley's Comet" *Astron. Soc. Pacific*, April 1972.
3. William I. McLaughlin, "The Natural History of Halley's Comet" *Journal of the British Interplanetary Society*, 1981.
4. Donald K. Yeomans, *The Comet Halley Handbook*, 1981, JPL 400-91.
5. T. L. Macdonald, "The Origins of Martian Nomenclature" *Icarus*, 1971.
6. J. B. Murray, A. Dolfuss, B. Smith, "Cartography of the Surface of Mercury" *Icarus*, 1972.
7. *Science*, 12 July 1974 - special issue on Mariner 10 flyby of Mercury.
8. R. B. Frauenholz, J. E. Ball, "A Summary of the Pioneer 10 Maneuver Strategy" *JPL Quarterly Technical Review*, October 1972.
9. N. P. Dwivedi, "Aiming Strategies for Quarantined Multi-Planet Missions" *JPL Quarterly Technical Review*, July 1972.
10. N. P. Dwivedi, "Maneuver Strategies for Multi-Planet Missions" *AIAA/AAS Astrodynamics Conference*, Palo Alto, CA, September 11-12, 1972.
11. T. M. Fraser, *The Intangibles of Habitability During Long Duration Space Missions*, NASA CR-1084, June 1968.
12. JPL Navigation Plan, 900-994, 1 April 1981.
13. C. S. Cook, "Suppose We Collide with a Planetoid" U.S. Naval Radiological Defense Laboratory, 9 December 1965. AD 628-218.
14. Robert J. Salkeld, "Data for Estimating Rocket Payloads in Two-Dimensional Minimum Energy Orbits Through the Solar System" GM-TN-0165-00173, Space Technology Laboratories, Ramo-Woolridge, 2 September 1958.
15. John J. Coleman, "Optimum Stage-Weight Distribution of Multistage Rockets" SDA-60-3, Space Technology Laboratories, 3 February 1960.

Finding Aids

No other finding aids exist for the collection.

FILE FOLDER LIST

Box 1 of 36 - Alderson Personal Information

Fld. 1 Personnel Information, 1971-1983.
Fld. 2 Tool Inventory, 1970-1985.
Fld. 3 Work Schedule, 1972, 1977, 1985.
Fld. 4 Section 314- Navigation Systems Organization Chart, and photograph, 1984-1985.
Fld. 5 Caltech Employees Federal Credit Union and Other Benefits, 1983-1985.
Fld. 6 Memos regarding move to Central Engineering Building, Bldg. 301, 1986.
Fld. 7 Star Names, n.d.
Fld. 8 Articles on Antigravity, photocopies, 1952-1962.
Fld. 9 Visibility of Far-Distant Objects from Earth-Surface Stations, n.d.
Fld. 10 Books to Look Up, n.d. (folder 1 of 2)
Fld. 11 (folder 2 of 2)
Fld. 12 Christmas card lists, 1980-1982.
Fld. 13 "Space at JPL," William McLoughlin column in *Spaceflight* Magazine, 1984.
Fld. 14 Los Angeles Science Fantasy Society, by-laws, standing rules, 1979-1982.
Fld. 15 LASFS notes, 1970-1973.
Fld. 16 LASFS note cards, c. 1980.
Fld. 17 "Space War," 1982.

Box 2 of 36 - Committee on Modern Programming (COMP)

Fld. 18 COMP meeting minutes, May-November 1974.
Fld. 19 COMP meeting minutes, November 1974-November 1975.
Fld. 20 COMP meeting announcements/seminars, 1974-1975.
Fld. 21 COMP memos, correspondence, 1972-1976.
Fld. 22 Reports, 1974-1976.
Fld. 23 COMP Language Working Group, meeting announcements/minutes, 1975-1976.
Fld. 24 COMP Language Working Group, software specifications documents, reports, 1976.

Box 3 of 36 - FORTRAN Information

Fld. 25 Metalinguistic Description of Fortran IV Syntax, November 9, 1962.
Fld. 26 IBM Systems Reference Library, FORTRAN IV (G) Programmer's Guide, 1966.
Fld. 27 IBM Systems Reference Library, FORTRAN IV (H) Programmer's Guide, 1966.
Fld. 28 IBM Systems Reference Library, FORTRAN IV Library Subprograms, 1966.
Fld. 29 IBM Systems Reference Library, FORTRAN IV Language, 1966.
Fld. 30 Conversion Aids: FORTRAN IV to PL/1 Language Conversion Program, 1968.
Fld. 31 UNIVAC 1108 FORTRAN IV/V Compiler Seminar, 1969.
Fld. 32 FORTRAN French Curve, by T. M. Lang, R. J. Hanson and D. R. Campbell, 1969.

Fld. 33 J. Hatfield, "FORTRAN Magnetic Tape- Input and Output" June 1970.
Fld. 34 E. Dimmick, "FORTRAN Debugging" March 15, 1971.
Fld. 35 John Flynn, "SFTRAN User Guide" July 31, 1973. (from binder)
Fld. 36 S-FORTRAN Programmer's Guide, July 2, 1974.
Fld. 37 S-FORTRAN Language Reference Guide, October 3, 1974.
Fld. 38 FORTRAN V Programmer Reference, 1974.
Fld. 39 Miscellaneous FORTRAN memos, correspondence, reports, 1974-1984.
Fld. 40 Fortran - SIGPLAN Notices, 1974-1975.

Box 4 of 36

Fld. 41 JPL FORTRAN V Subprogram Directory, Edition 5, February 1, 1975.
Fld. 42 ATHENA FORTRAN memos, 1975.
Fld. 43 Fortran Development Newsletter, 1976.
Fld. 44 FORCE (FORTRAN: Control Extended, Level 1), 1976.
Fld. 45 FORTRAN workshops certificates, 1976-1980.
Fld. 46 West Coast FORTRAN Forum, February 9, 1976.
Fld. 47 B. Cooper, "How to Run a FORTRAN Program 'The Beginning'" October 13, 1976.
Fld. 48 User's Guide to SFTRAN II (SFTRAN- Version C), October 15, 1976.
Fld. 49 ATHENA - Trajectory and Variational Equations, 1977.
Fld. 50 Shirley A. Gold, "1108 FORTRAN V Input/Output" October 1, 1977.
Fld. 51 ASCII Fortran for the Experienced Fortran V User, c. 1978.
Fld. 52 Conversion of SFTRAN Programs to SFTRAN 3, December 1, 1978.
Fld. 53 TRS-80 FORTRAN materials (binder), 1979. (folder 1 of 2)
Fld. 54 (folder 2 of 2)
Fld. 55 Microsoft FORTRAN-80 Reference Manual, 1980.

Box 5 of 36

Fld. 56 Fortran - Conversion of Univac Fortran V and Perrine Athena Fortran to UNIVAC ASCII Fortran, 1981.
Fld. 57 Sperry UNIVAC Series 1100 FORTRAN (ASCII) Level 1 OR1 Release Description, February 1981.
Fld. 58 C. L. Lawson, "SFTRAN 3 Programmer's Reference Material, Revision A," April 15, 1981.
Fld. 59 *VAX-11 FORTRAN Language Summary*, 1982.
Fld. 60 FORTRAN 8X memos, 1982.
Fld. 61 FORTRAN 77 memos, 1982.
Fld. 62 Loren P. Meissner, "Fortran 8X - Weather Vane" March 23, 1982.
Fld. 63 FORTEC Forum, March 1983.
Fld. 64 FORTRAN Level 11R1 Release Document, 1983.
Fld. 65 Workshop on Conversion of JPL Fortran Programs to Federal Standard Fortran (Fortran 77), December 5, 1983.
Fld. 66 SIGMA 5 ELTS/ SFTRAN notes, 1985.
Fld. 67 File Conversion, Fortran 77 to Fortran V, 1985.
Fld. 68 C. L. Lawson, "The SFTRAN Preprocessor, Level 16-d, 1986.
Fld. 69 Don German, "Introduction to JFOR- JPL's Extended Fortran Compiler" n.d.
Fld. 70 Fred T. Krogh, "On Control Structures for FORTRAN" n.d.
Fld. 71 Structured Fortran Preprocessor Questionnaire, n.d.
Fld. 72 Fortran Flow Charts, n.d.
Fld. 73 Fortran - MPL/1a notes, n.d.

Fld. 74 MPL - transparencies, n.d.
Fld. 75 Athena Manual, n.d.

Box 6 of 36 - MBASIC
Fld. 76 *MBASIC Volume 1: Fundamentals*, March 1973. (bound)
Fld. 77 *MBASIC Volume 2: Appendices*, March 1973. (bound)
Fld. 78 *MBASIC Primer*, c. 1973. (bound)
Fld. 79 MBASIC notes, 1973-1974.

PL/1 (Programming Language/1)
Fld. 80 IBM Systems Reference Library, PL/1 Language Specifications, 1966.
Fld. 81 PL/1 Subset Language Specifications, 1966.
Fld. 82 A PL/1 Translator, 1966.
Fld. 83 Frank Bates and Mary L. Douglas, *Programming Language/One*, 1967. (folder 1 of 2)
Fld. 84 (folder 2 of 2)

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Fld. 85 PL/1 Subset Reference Manual, 1967.
Fld. 86 PL/1 FORMAC Course Notes, 1968.
Fld. 87 IBM Systems Reference Library, PL/1 Subroutine Library, Computational Subroutines, 1968.
Fld. 88 IBM Systems Reference Library, PL/1 Programmer's Guide, 1968.
Fld. 89 IBM Systems Reference Library, PL/1 Reference Manual, 1968.
Fld. 90 PL/1 FORMAC: Manual, 1969.
Fld. 91 Gerald M. Weinberg, *PL/1 Programming: A Manual of Style*, 1970. (folder 1 of 3)
Fld. 92 (folder 2 of 3)

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Fld. 93 (folder 3 of 3)

HAL/S
Fld. 94 HAL/S- MODCOMP User's Guide, May 1, 1980.
Fld. 95 HAL/S Language Specification Version IR-542, September 1980.
Fld. 96 HAL/S miscellaneous documents, 1980-1982.

Ada Programming Language
Fld. 97 John C. Knight, "The Ada Programming Language and Its Importance to NASA" November 1980.
Fld. 98 Bruce Knobe, "Flight Languages: Ada vs. HAL/S" c. 1980.
Fld. 99 Ronald F. Brender, Isaac R. Nassi, "What is Ada?" June 1981.

Pascal
Fld. 100 Niklaus Wirth, "The Programming Language Pascal (Revised Report)" July 1973.
Fld. 101 E. N. Miya, "A Report on the Status of the Computer Language Pascal" December 5, 1978.
Fld. 102 Pascal Referencer - User Manual, December 17, 1979.
Fld. 103 Pascal Cross-Reference Generator, July 21, 1981.
Fld. 104 Pascal Formatter - User's Guide, n.d.

SIMSCRIPT

Fld. 105 SIMSCRIPT II notes, n.d. (folder 1 of 2)
Fld. 106 (folder 2 of 2)

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Fld. 107 SIMSCRIPT II.5 User's Manual, n.d. (folder 1 of 2)
Fld. 108 (folder 2 of 2)

ALGOL

Fld. 109 Daniel D. McCracken, *A Guide to ALGOL Programming*, 1962.
Fld. 110 "Revised Report on the Algorithmic Language ALGOL 60" and articles commenting on the report, 1967-1972.
Fld. 111 IBM Systems Reference Library, ALGOL Language, 1967.
Fld. 112 ALGOL notes, 1967.
Fld. 113 ALGOL Programmers Reference, 1967.
Fld. 114 IBM Systems Reference Library, ALGOL Programmer's Guide, 1969.

Simula

Fld. 115 Simula Programmers Reference, 1967.
Fld. 116 Simula Programmers Reference, Revision 1, 1970.

APL

Fld. 117 APL/360 User's Manual, March 1970.
Fld. 118 APL/360 Primer, August 1971.
Fld. 119 D. Sonnabend, "APL/PC User's Guide and Reference Manual" November 3, 1983.
Fld. 120 APL User's Guide Revisions, n.d

Box 10 of 36 - SNOBOL

Fld. 121 SNOBOL 3 Primer, 1967.
Fld. 122 Auerbach Institute, "The Structure of SNOBOL 4" Spring 1968. (bound)

VAX

Fld. 123 VAX-11 FORTRAN Language Reference Manual, April 1982.
Fld. 124 VAX-11 FORTRAN User's Guide, April 1982.
Fld. 125 VAX/VMS Primer, May 1982.
Fld. 126 VAX/VMS Guide to Using Command Procedures, May 1982.
Fld. 127 VAX/VMS Command Language User's Guide, May 1982. (folder 1 of 3)
Fld. 128 (folder 2 of 3)
Fld. 129 (folder 3 of 3)

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Fld. 130 VAX/VMS Guide to Using Command Procedures, May 1982.
Fld. 131 VAX Information, 1982-1983.
Fld. 132 VAX Memos, Correspondence, 1982-1984.
Fld. 133 VAX/VMS User's Introduction, 1982.
Fld. 133A VAX Command Language Overview, 1982.
Fld. 134 VAX-UNIVAC Text File Transfer, 1984.
Fld. 135 VAX/VMS File Searching Procedures, n.d.

Miscellaneous Computer Language Handbooks

Fld. 136 Advanced Research Projects Agency, *The Tree-Meta Compiler-Compiler System: A Meta Compiler System for the UNIVAC 1108 and the General Electric 645*, March 1969.
Fld. 137 SCF Math Language Manual, June 15, 1970.
Fld. 138 JPL UNIVAC 1108 LISP User Manual, June 16, 1972.
Fld. 139 W. V. Snyder, "Engineer's Calculator Language - ECL" August 15, 1973.
Fld. 140 Program Design Language Reference Guide (Processor Version 3), May 8, 1975.
Fld. 141 Grant Holland, "Introduction to UNIVAC 1100 Series Executive Control Language" September 1974.
Fld. 142 SDDL Data, 1977.
Fld. 143 High Order Programming Languages, memos, 1978-1981.

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Fld. 144 DATATRIEVE-11 V2.0 User's Guide, July 1980.
Fld. 145 TMGL, 900-564, Section IX, rough draft, n.d.
Fld. 146 Joe Cointment, "TMGL User's Guide for the 1108 Version of TMG" n.d.

Trajectory Group and Navigation Group Progress Reports

Fld. 147 Trajectory Group, Monthly Progress Reports, 1969.
Fld. 148 Monthly Progress Reports, 1970.
Fld. 149 Bimonthly Progress Reports, 1971.
Fld. 150 Bimonthly Progress Reports, 1972.
Fld. 151 Bimonthly Progress Reports, 1973.
Fld. 152 Navigation Group Progress Reports, 1974-1977.

Box 13 of 36 - Trajectories and Ephemerides Files

Fld. 153 Trajectories - Lambert's Theorem/ Various trajectory routines, n.d.
Fld. 154 Hyperbolic-Elliptic Transfer, n.d.
Fld. 155 Ephemerides - Technical Memoranda, Reports, 1966-1967.
Fld. 156 Satellite Data, 1967-1977.
Fld. 157 Satellite Ephemerides, Interoffice Memos, 1974-1978.
Fld. 158 Satellite memos, equations, 1977.
Fld. 159 C. L. Lawson, "JPL Ephemeris Development, 1960-1967" February 23, 1981.
Fld. 160 Satellite Ephemerides Files, 1984.
Fld. 161 Star Coordinates, n.d.

Time Conversion Programs

Fld. 162 Julian Date and Modified Julian Date Table, November 19, 1962 (folder 1 of 2)
Fld. 163 (folder 2 of 2)
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CATALOG DESCRIPTION

Daniel J. Alderson Collection, 1962-1986.
12.6 cu. ft. (30 boxes and 6 oversize boxes)

The collection documents the career of Daniel J. Alderson, a computing analyst in JPL's Navigation Systems Section. Alderson, who started work at JPL in 1962, worked in various sections dealing with computer programming and engineering. From 1978 until his death in 1989 he worked for the Navigation Systems Section.

The primary emphasis of the collection is Alderson's computer programs that calculate the trajectories of robotic planetary probes. The collection includes reports, memoranda, meeting announcements and minutes, correspondence, computer printouts, published material, handwritten notes, and mathematical calculations and formulas.

Included in the collection is documentation regarding the Maneuver Operations Program System of Mariner Mars 1971, Mariner Venus/Mercury 1973 and Voyager missions. Trajectory calculations are included for the above missions as well as the Viking Orbiter.

Register available in the repository.

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